

2023

Lower Platte North NRD Basin Coalition Plan



Annual Report

Lower Platte North Natural Resources District

3/1/2023

2023

Lower Platte North Natural Resources District

Lower Platte Basin River Plan Report

Introduction

Report period is from January 1, 2022 to December 31, 2022.

Water Quantity Activities

Ground Water Level Summary Comparison of Spring 2021 to Spring 2022

Aquifer Subarea	Number of Wells Measured	Median Change (Feet)	Mean Change (Feet)	Number of Wells Increased	Number of Wells Unchanged (+ or - 0.3 Feet)	Number of Wells Decreased
Platte Valley	58	-1.03	-1.27	5	11	42
Bellwood	5	-1.40	-1.45	0	1	4
Fremont	7	-1.37	-2.79	2	0	5
Fremont East	3	-1.37	-1.45	0	0	3
Leshara Platte Valley	1	-0.65	-0.65	0	0	1
North Bend	9	-2.35	-2.35	0	0	9
Octavia	5	-1.04	-1.03	0	1	4
Platte River Uplands	4	-0.23	0.05	2	1	1
Schuyler	6	-1.44	-1.55	0	0	6
Wann	18	-0.28	-0.38	1	9	8
Shell Creek	46	-0.95	-0.97	5	5	36
Lower Newman Grove	2	[-1.75, -0.07]	-0.91	0	1	1
Lower Shell Creek	6	-1.01	-0.99	1	0	5
Middle Shell Creek	17	-0.95	-0.96	3	0	14
Newman Grove	3	-1.70	-1.81	0	0	3
Platte Center	6	-1.24	-1.35	0	0	6
Shell Creek Uplands	2	[-0.77, +0.57]	-0.10	1	0	1
Upper Newman Grove	9	-0.75	-0.77	0	3	6
Upper Shell Creek	1	0.13	0.13	0	1	0
Todd Valley	19	-0.28	-0.18	3	7	9
(north of Hwy 92)	7	0.01	0.36	2	3	2
(south of Hwy 92)	12	-0.48	-0.50	1	4	7
Uplands	56	0.28	0.73	26	11	19
David City	19	2.84	2.41	17	0	2
Leshara Uplands	4	-0.18	-0.12	0	3	1
Morse Bluff	3	0.50	0.80	3	0	0
Prague	5	-1.04	0.25	1	1	3
Swedeberg	9	-0.25	-0.19	1	4	4
Weston	7	-0.70	-0.42	2	0	5
Yutan	5	-0.21	-0.16	2	2	1
Yutan South	4	-0.59	-0.62	0	1	3

22% 19% 59%

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Lower Platte North static water measurements showed a concerning trend like most of Eastern Nebraska. It showed that 59% of the water levels declined in the spring of 2022 compared to spring 2021. Fall level measurements taken in 2022 also showed a decline from the previous fall. Soil moisture sensors installed at LPN weather stations showed a decline of soil moisture within the top 24 inches from January to December.

The Drought Consortium met to discuss projects that are feasible and which ones should be taken off the list. The group has identified some of the options that will get re-evaluated and discussed further in 2023.

Well Permits Issued Approved, Cancelled or Denied

The Lower Platte North issued 32 new wells permits in 2022. There were 20 irrigation wells, which 12 were replacement: 1 replacement commercial well for a gravel/sand pit and 2 stock wells for existing operations.

Water Use Information for Irrigation Wells

Total Number of Reports from Flow Meters – 1175 in 2022 compared to 1075 in 2021. Water Use from the Special Quantity Subareas (Allocated areas)

Overall Average: (Inches per acre)

SQS#1 – 6.28" in/ac

SQS#2 – 7.64" in/ac.

Both areas combined – 7.18" in/ac.

Corn Avg. 7.16" in/ac. (Min. 1.00"; Max. 12.52")

Soybean Avg. 4.24" in/ac. (Min. 1.72"; Max. 6.77")

Rest of the District:

Pivot/Corn Avg. 8.3" in/acre (Min. 1.06"; Max. 35.88")

Pivot/Soybeans Avg. 6.38" in/acre (Min. 1.68"; Max. 19.01")

Gravity/Corn Avg. 19.40" in/acre (Min. 12.64"; Max 38.53")

Gravity/Soybeans Avg. 19.66" in/acre (Min. 10.15"; Max. 26.45")

Public Outreach

The District conducted 10 nitrogen/irrigation certification meetings for producers with 200-300 in attendance. The NRD has been involved with numerous school events with one event with NeDNR involvement. A joint awareness statement was issued with the Consortium members on the drought situation. The District publishes a newsletter that goes into the local newspapers with topics this last year pertaining to drought, lawn watering and flow meters.

Municipal Water Uses

City-Village-Town	Total Gallons (2021)	Total Gallons (2022)	Population	Consumptive Consumptive Range in Acre Feet- (Non- drought Vs. Drought)
Ashland	157,879,000	183,301,000	3,200	450-575
Bellwood	17,879,000	19,807,000	400	40-60
Newman Grove	36,634,547 (not accurate) Most likely was 136,634,547	172,364,900 (COOP is on city water)	660	400-500
Lindsay	72,164,700	88,379,600	285	200-225
Platte Center	16,089,370	20,817,596	340	40-60
David City	198,080,911	147,367,497 (lost Henningsen foods but gaining new industries)	2,900-3,050	450-650
Wahoo (Colon included)	232,551,090	251,984,510	4,550-4,750	700-800
Yutan	47,582,000	54,948,000	1500	150-200
Mead	19,098,187 (Filled new water tower)	17,980,562	625	50-65
Fremont	3,927,356,000 (within LPN)	4,784,226,000 (added Costco facility)	27,375	13,500- 14,750
North Bend	93,723,000	65,320,000	1,200	200-300
Schuyler	396,327,340	390,160,000	6,550	1,100-1,250
Cedar Bluffs	21,445,017	29,104,767	615	75-95
Prague	11,367,000	12,236,000	300	30-40
Weston	16,270,960	22,800,800	230	45-75
Malmo	3,889,950	4,500,000	100	7-12
Ithaca	4,480,000	5,500,000	165	13-18
Abie	3,325,550	3,045,800	60	7-12
Memphis	9,242,000	9,524,000 (Memphis State Lake is on town water)	110	25-30
Bruno (Population included in David City)	David City total	3,000,000-5,000,000	100	7-12
Colon (Population included in Wahoo)	Wahoo total	3,000,000-5,000,000	110	7-12
Lincoln	4,380,468,900 (within LPN)	4,945,551,030	295,000	12,250- 15,250
MUD West	9,629,850,000 (within LPN)	9,401,698,000	595,000	24,000- 30,000
Morse Bluffs	3,797,000	4,082,000	130	7-12

Lower Platte North Rural Water Systems supplies water to Bruno and Colon with David City and Wahoo supplying the water. The total water use is already shown under the respective communities for 2022.

Industrial Water Uses

Well Reg	2021 Total Water Use	2022 Total Water Use	Owner
G-171827	?	From July 8 th - December 31 st 18,722,523	Darling International
G-153440	0	0	Butler County Landfill Inc
G-171846	30,989,230	26,882,460	Western Sand and Gravel
G-177445	0	0	Western Sand and Gravel

Livestock Uses

The NRD is obtaining numbers from various livestock operations within the district. A couple of sites have dataloggers with remote reads. Listed below are a few of the livestock operations that we continue to collect pumping information from:

Well Reg	2022 Total Water Use/Gallons	Size	Specific Use
G-152182	26,165,594	9,500	Cattle
G-117412	27,682,060	?	Swine
G-111561	8,166,565	2,500	Cattle
G-185115 & G-136919	58,692,012	?	Dairy
G-189724	9,661,121	12 barns	Chickens
G-186141	7,603,120	8 Barns	Chickens

Turf irrigation within the LPNNRD:

Location	2021 Acre Inches Applied	2022 Acre Inches Applied
Fremont Golf Course	13.51	20.56
David City Golf Course	8.76	12.63
Todd Valley Farms	6.98	15.05

Dewatering Wells within City of Fremont

Well Reg	2021 Total Water Use/Gallons	2022 Reading Total Water Use/Gallons
G-181255	34,568,762	97,965,313
G-181192	16,213,509	Did not use
G-191057	5,107,686	Have not received
G-181257	9,827,796	27,710,928

Stream gage measurements on District Maintained Gages:

Lower Platte North gages are joint projects with USGS or NeDNR. LPN installed 5 cameras on the Platte River with assistance from the USGS.

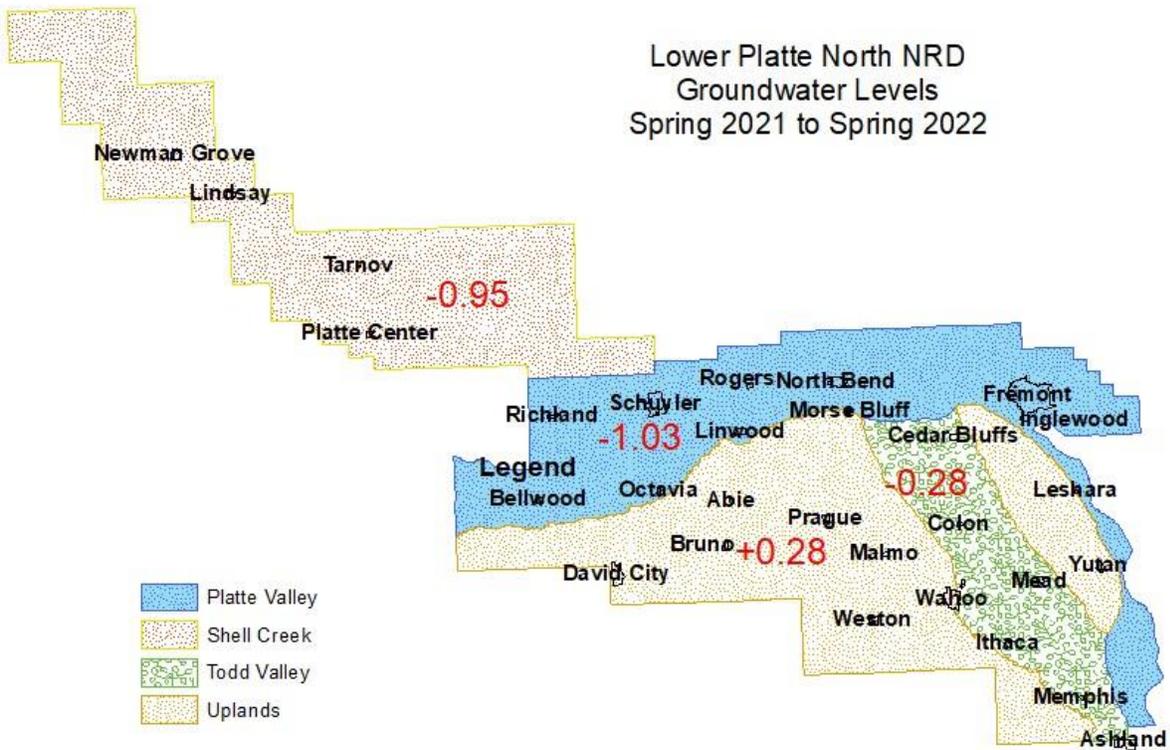
Water Banking Activities: None for 2022.

Streamflow Accretion Activities (new projects, conjunctive management

projects, etc.): None for 2022

Water Supply Inventory and Groundwater Elevation Data

Groundwater Levels 2021-2022 - As shown by the map, groundwater levels have declined from spring 2021, with 59% of the wells declined from the 2021 spring levels. Fall levels in 2022 did show a decline from Fall 2021.



Certified Acres

ALL IRR	All Irrigation Ground	All Irrigation Surface	All Irrigation Commingled
County			
Boone	28622.40	0.00	0.00
Butler	57041.37	671.15	373.05
Colfax	53823.79	240.34	1003.89
Dodge	51034.25	84.52	599.09
Madison	5797.75	0.00	0.00
Platte	90084.90	692.15	1091.70
Saunders	105279.68	2617.39	2055.22
Total	391684.14	4305.55	5122.95
HCA IRR			
HCA Ground			
HCA Surface			
HCA Commingled			
County			
Boone	28622.40	0.00	0.00
Butler	45231.78	602.82	83.02
Colfax	46908.34	205.64	1003.89
Dodge	51034.25	84.52	599.09
Madison	5797.75	0.00	0.00
Platte	76867.58	692.15	1091.70
Saunders	80440.32	2545.50	1823.73
Total	334902.42	4130.63	4601.43
NON HCA IRR			
Non_HCA Ground			
Non_HCA_Surface			
Non_HCA_Commingle			
County			
Boone	0.00	0.00	0.00
Butler	11809.59	68.33	290.03
Colfax	6915.45	34.70	0.00
Dodge	0.00	0.00	0.00
Madison	0.00	0.00	0.00
Platte	13217.31	0.00	0.00
Saunders	24839.35	71.89	125.59
Total	56781.70	174.92	415.62

New Depletions and Groundwater Consumptive Uses 2022 Granted:

NRD Transaction ID	County	Township	Range	Direction	Section	Change Type	Change Date	Area (acres)	Use of Irrigated Acres	SDF	NIR feet	Acre Feet Depletion
LPN-V-022-0562	Saunders	16	7	E	27	new expansion	10/10/2022	54.34	Crop Production	0.66798	0.75	8.31
LPN-V-022-0563	Saunders	16	7	E	27	new expansion	10/10/2022	59.94	Crop Production	0.66798	0.75	9
LPN-V-022-0564	Saunders	16	7	E	22	expansion	10/10/2022	57.74	Crop Production	0.69694	0.75	9.05
LPN-V-022-0565	Saunders	15	8	E	15	expansion	10/10/2022	7.7	Crop Production	0.61618	0.75	1.07
LPN-V-022-0567	Saunders	15	8	E	23	new expansion	10/10/2022	16	Crop Production	0.59456	0.75	1.92
LPN-V-022-0568	Saunders	16	7	E	15	expansion	10/10/2022	20	Crop Production	0.69794	0.75	3.14
LPN-V-022-0569	Saunders	16	6	E	13	expansion	10/10/2022	20	Crop Production	0.80911	0.75	3.64
LPN-V-022-0571	Saunders	15	7	E	13	new expansion	10/10/2022	66	Crop Production	0.74286	0.75	11.03
LPN-V-022-0572	Platte	20	3	W	36	new expansion	10/10/2022	35	Crop Production	0.64902	0.75	5.11
LPN-V-022-0573	Platte	19	2	W	14	new expansion	10/10/2022	84.52	Crop Production	0.50013	0.75	9.51
LPN-V-022-0574	Boone	22	6	W	15	expansion	10/10/2022	21	Crop Production	0.44357	0.75	2.1
LPN-V-022-0575	Saunders	16	6	E	22	expansion	10/10/2022	35	Crop Production	0.89131	0.75	7.02
LPN-V-022-0576	Boone	22	5	W	19	new expansion	10/10/2022	135	Crop Production	0.43022	0.75	13.07
LPN-V-022-0577	Boone	22	6	W	2	expansion	10/10/2022	21.46	Crop Production	0.37166	0.75	1.8
LPN-V-022-0578	Saunders	16	7	E	20	expansion	10/10/2022	15	Crop Production	0.74574	0.75	2.52
LPN-V-022-0579	Saunders	14	9	E	27	new	10/10/2022	35	Crop Production	0.89799	0.75	7.07
LPN-V-022-0580	Saunders	16	7	E	10	expansion	10/10/2022	20	Crop Production	0.64196	0.75	2.89
LPN-V-022-0581	Saunders	14	9	E	6	expansion	10/10/2022	15	Crop Production	0.91773	0.75	3.1
LPN-V-022-0583	Boone	22	6	W	12	expansion	10/10/2022	18	Crop Production	0.3871	0.75	1.57
LPN-V-022-0584	Saunders	15	8	E	34	expansion	10/10/2022	33	Crop Production	0.69584	0.75	5.17
LPN-V-022-0586	Boone	21	5	W	25	expansion	10/10/2022	33	Crop Production	0.75343	0.75	5.59
LPN-V-022-0587	Saunders	14	9	E	16	new expansion	10/10/2022	80	Crop Production	0.96	0.75	17.28
LPN-V-022-0588	Saunders	16	7	E	22	expansion	10/10/2022	60	Crop Production	0.69694	0.75	9.41
LPN-V-021-0537	Colfax	18	3	E	27	expansion	10/10/2022	91	Crop Production	0.89655	0.75	13.63
LPN-V-021-0553	Platte	19	2	W	25	new expansion	10/10/2022	90	Crop Production	0.55389	0.75	11.22
LPN-V-021-0540	Saunders	14	9	E	11	expansion	10/10/2022	68	Crop Production	0.81163	0.75	12.42
LPN-V-021-0539	Saunders	14	9	E	14	expansion	10/10/2022	68	Crop Production	0.83015	0.75	12.701
Total Acres								1259.7	Total Acre Feet Depletion		190.341	

Water Transfer Permits 2022 Granted:

The Lower Platte North had 2 additional transfers approved or started in November. The one transfer was not completed until after the first of the year, which is a transfer off a solar farm location. The 2 transfers shown did irrigate in the summer of 2022, so now are included in the report. Transfer LPN-T-022-001 shows a site that came from a more restricted site that has issues with water transmissivity and saturated thickness. This is an area that does not have an SDF number because it is not in LPN HCA area. It is beneficial for the District to move irrigated acres out of this area, so more water is available for everyone.

NRD Transaction ID	County	Township	Range	Direction	Section	SubSection	Change Type	Change Date	Area (acres)	Use of Irrigated Acres	SDF	NIR feet	Acre Feet Depletion
LPN-T-022-001	Butler	16	3	E	2	NW	Transfer To	6/1/2022	142	Crop Production	0.822	0.75	26.26
LPN-T-022-001	Butler	15	4	E	9	S SW	Transfer From	6/1/2022	73.41	Crop Production	N/A	0.75	0.00
LPN-T-022-001	Butler	16	2	E	13	W SW	Transfer From	6/1/2022	68.59	Crop Production	0.743	0.75	11.47
LPN-T-022-002	Platte	18	1	W	21	NE	Transfer to	1/2/2022	47	Crop Production	0.96	0.75	10.15
LPN-T-022-002	Platte	18	1	W	23	SE	Transfer From	1/2/2022	37	Crop Production	0.96	0.75	7.99
LPN-T-022-002	Platte	18	1	W	21	SE	Transfer From	1/2/2022	10	Crop Production	0.96	0.75	2.16
Total Depletion Difference												14.74	

Depletions and Groundwater Consumptive Uses Voided in 2022:

In November action was taken to void the following variance because they were not developed. These sites did have acre feet depletion in prior V-IMP reports and the table shows the year that they were included in the report.

Initial approval year	NRD Transaction ID	County	Aquifer Region	Township	Range	Direction	Section	SubSection	Change Type	Change Date	Area (acres)	Use of Irrigated acres	SDF	NIR feet	Acre Feet Depletion allowed
2017	LPN-V-013-0308	Colfax	North Bend		18	4 E		35 BC CB	credit	12/1/2022	70	Crop Production	0.73	0.75	10.271
2017	LPN-V-015-0432	Dodge	Fremont East		17	9 E		24 AA AB	credit	12/1/2022	53	Crop Production	0.96	0.75	10.227
2017	LPN-V-014-0401	Boone	Upper Newman Grove		21	5 W		15 DA DD	credit	12/1/2022	74	Crop Production	0.589	0.75	8.761
2017	LPN-V-012-0189	Platte	Lower Newman Grove		20	3 W		22 A	credit	12/1/2022	130	Crop Production	0.691	0.75	18.056
2017	LPN-V-013-0325	Colfax	North Bend		18	4 E		36 AA AB AC	credit	12/1/2022	100	Crop Production	0.717	0.75	14.412
2017	LPN-V-013-0304	Madison	Newman Grove		21	4 W		22 CO	credit	12/1/2022	130	Crop Production	0.686	0.75	10.755
2017	LPN-V-014-0391	Saunders	Todd Valley		13	9 E		34 DO	credit	12/1/2022	117	Crop Production	0.895	0.75	21.048
2017	LPN-V-013-0279	Saunders	Todd Valley		14	7 E		23 AD	credit	12/1/2022	65	Crop Production	0.779	0.75	10.178
2017	LPN-V-017-0466	Saunders	Todd Valley		16	6 E		2 AA AB	credit	12/1/2022	40	Crop Production	0.783	0.75	6.295
2017	LPN-V-017-0455	Saunders	Todd Valley		16	7 E		19 CC	credit	12/1/2022	15	Crop Production	0.851	0.75	2.566
2017	LPN-V-014-0370	Saunders	Weston		14	6 E		2 CA CD DB DC	credit	12/1/2022	25	Crop Production	0.96	0.75	4.824
2017	LPN-V-016-0436	Platte	Middle Shell Creek		19	2 W		25 C	credit	12/1/2022	90	Crop Production	0.553	0.75	10.004
2018	LPN-V-013-0337	Colfax	Schuyler		17	3 E		22 CB	credit	12/1/2022	5.45	Crop Production	0.96	0.75	1.177
2018	LPN-V-013-0247	Saunders	Weston		15	7 E		31 B & C	credit	12/1/2022	100	Crop Production	0.87	0.75	19.575
2018	LPN-V-013-0275	Butler	Bellwood		16	2 E		7 CC	credit	12/1/2022	30	Crop Production	0.928	0.75	6.264
2018	LPN-V-013-0355	Dodge	North Bend		17	5 E		5 BA	credit	12/1/2022	36	Crop Production	0.811	0.75	6.569
2018	LPN-V-013-0287	Saunders	Leshara Uplands		17	8 E		34 BO	credit	12/1/2022	85	Crop Production	0.912	0.75	17.442
2018	LPN-V-013-0248	Saunders	Todd Valley		13	9 E		34 BA & BB	credit	12/1/2022	65	Crop Production	0.895	0.75	13.089
2018	LPN-V-013-0281	Saunders	Schuyler		17	5 E		18 CD	credit	12/1/2022	36	Crop Production	0.897	0.75	7.266
2018	LPN-V-012-0194	Platte	Upper Newman Grove		20	4 W		4 CD	credit	12/1/2022	54	Crop Production	0.806	0.75	9.793
2018	LPN-V-013-0362	Saunders	Swedeberg		14	7 E		20 BO	credit	12/1/2022	130	Crop Production	0.792	0.75	23.166
2019	LPN-V-019-0494	Dodge	North Bend		18	7 E		27 BC AC DD	credit	12/1/2022	108	Crop Production	0.135	0.75	3.402
2019	LPN-V-012-0159	Platte	Lower Newman Grove		20	3 W		6 A	credit	12/1/2022	85	Crop Production	0.688	0.75	13.140
2020	LPN-V-020-0509	Boone	Upper Newman Grove		22	5 W		19 B	credit	12/1/2022	120	Crop Production	0.43	0.75	11.610
Total Acres not developed											1763.45	Total Acre Feet Depletion Voided		259.889	

Summary of Depletions and Consumptive Uses.

The Lower Platte North (LPN) gave out 205.081 Acre Feet in new uses in 2022 but will take credit for 259.889 Acre Feet from prior years. This will leave LPN with an additional 54.808 going forward in the next 5-year allotment.